IN THE CLAIMS:

1. (Currently Amended) A current sensor using a magnetic detection device having a magnetic body adapted to allow high frequency currents to directly flow through it and change its magnetic permeability in response to the external magnetic field, said sensor comprising:

parallel electric wire sections of a pair of electric wires arranged in parallel with each other and adapted to flow respective electric currents of the same intensity in directions opposite to each other; ~~and~~

~~said magnetic detection device arranged on a prolonged line connecting the center axes of said parallel electric wire sections,~~

wherein said magnetic detection device has a magnetic field detecting direction rectangular relative to [[the]] a prolonged line connecting centers of said parallel electric wire sections and is adapted to detect the difference between the magnetic field formed by the parallel electric wire section located close to the magnetic detection device and the magnetic field formed by the parallel electric wire section located remote from the magnetic detection device and directed oppositely relative to the former magnetic field in order to detect the intensity of the electric currents flowing through said parallel electric wire sections.

2. (Currently Amended) A sensor according to claim 1, wherein the magnetic field ~~filed~~ applied to said magnetic detection device is within a range of ±15 mT relative to the largest current value to be metered.

3. (Original) A sensor according to claim 1, wherein the parallel electric wire section located close to said magnetic detection device and the parallel electric wire section located remote from said magnetic detection device are coupled at respective one ends thereof within the sensor.

4. (Original) A sensor according to claim 1, wherein the parallel electric wire section located close to said magnetic detection device and the parallel electric wire section located remote from said magnetic detection device are connected to each other at respective one ends by way of a U-shaped electric wire section.

5. (Original) A sensor according to claim 1, wherein said parallel electric wire sections have an oblong rectangular cross section extending in the magnetic field detecting direction of said magnetic detection device and the width of the cross section as viewed in the longitudinal direction is greater than the length of the detecting section of the device.

6. (Original) A sensor according to claim 5, wherein the gap d separating said parallel electric wire sections is smaller than the distance s separating the parallel electric wire section located close to said magnetic detection device and said magnetic detection device.

7. (Original) A sensor according to claim 6, further comprising:

a magnetic shield surrounding said parallel electric wire sections and said magnetic detection device with the inner wall surface of said magnetic shield separated from said parallel electric wire sections by a distance greater than d + s.

8. (Currently Amended) A current detection unit comprising:

a current sensor including:

parallel electric wire sections of a pair of electric wires arranged in parallel with each other and adapted to flow respective electric currents of the same intensity in directions opposite to each other; and

a magnetic detection device having a magnetic body adapted to allow high frequency currents to directly flow through it and change its magnetic permeability in response to the external magnetic field,

said magnetic detection device having a magnetic field detecting direction rectangular relative to a prolonged line connecting centers of said parallel electric wire sections and being adapted to detect the difference between the magnetic field formed by the parallel electric wire section located close to the magnetic detection device and the magnetic field formed by the parallel electric wire section located remote from the magnetic detection device and directed oppositely relative to the former magnetic field in order to detect the intensity of the electric currents flowing through said parallel electric wire sections;

a circuit substrate carrying said magnetic detection device and said parallel electric wire sections thereon,

said circuit substrate being provided at a part thereof with a through hole or notch, free ends of said parallel electric wire sections being exposed to the outside through said through hole or notch; and

a detection circuit arranged on said circuit substrate to detect the output of the current detection unit by way of said magnetic detection device.

9. (Original) A unit according to claim 8, wherein said detection circuit detects the change in the impedance at the opposite ends of the magnetic body of said magnetic detection device.

10. (Original) A unit according to claim 8, further comprising:

a coil arranged close to said magnetic detection device, said detection circuit being adapted to detect the change in the voltage produced in said coil.

11. (Original) A unit according to claim 8, further comprising:

a magnetic shield member surrounding said current sensor and said circuit substrate.

12. (Original) A unit according to claim 11, wherein the gap separating said parallel electric wire sections in said magnetic shield member and the gap separating said parallel electric wire sections projecting from said magnetic shield member differ from each other.

13. (New) A current detection unit according to Claim 8, wherein said magnetic detection device is arranged on the prolonged line.

14. (New) A current sensor according to Claim 1, wherein said magnetic detection device is arranged on the prolonged line.